# Executive Summary

<u>**Observations**</u>

1. Beta matters, but the choice of time period for measurement and the calculation methodology are critical to achieving practical results.
2. High beta stocks have contributed significantly to negative total returns, due to both a net long bias and to poor stock selection. The total portfolio ex high beta stocks has shown positive stock selection.
3. The high beta portion of the portfolio tends to be 1)small capitalization, 2) low yield, 3)"value" style and 4) exhibits unpredictable behavior that is a challenge to both portfolio construction and stock selection.
4. Negative stock selection from high beta stocks does not appear to have an industry bias.
5. A tendency to offset $ Net exposure in REIT industry sub-groups is reasonably effective as these groups have high cross-correlation.
6. A tendency to offset $ Net exposure between Banks and Capital Markets has not been effective as these groups have lower cross correlation and dissimilar volatility.
7. The Insurance sub-groups are particularly differentiated in terms of both correlation and market risk. This high dispersion suggests these groups should be constructed separately.

<u>**Recommendations**</u>

1. Screen out high beta stocks (greater than 2.0 vs. S&P 500), or high standard error stocks until their behavior is better understood. While it is possible to better neutralize the beta effect of these securities through improved portfolio construction, they are likely to maintain an outsized and unpredictable effect on stock selection.
    a. It's possible the behavior of these securities is correlated with the "quality" macro factor and thus impacted by the "risking/de-risking" market effect; this could be an interesting area of future research.
    b. Their low degree of predictability in terms of CAPM may also indicate fundamental problems that pose a challenge to traditional methods of identifying mispriced securities.
2. Use beta exposure rather than $Net exposure in portfolio construction. The best choice is to use Industry Beta rather than Market Beta because while some subgroups are highly correlated, they can exhibit differing degrees of volatility.
3. Consider constructing the Bank and Capital Markets groups, and the Insurance groups of the portfolio separately. The relatively lower correlation and significant industry beta differences within these groups make them less appropriate for "netting".
4. Re-lever the portfolio. The improved risk profile from eliminating unintended beta tilts and volatile stock selection from high beta stocks will cause a significant drop in overall risk measures. A portfolio with greater emphasis on pure stock selection from historically profitable risk buckets lends itself to additional leverage while maintaining an appropriate degree of total risk.

1. **Beta matters, but the choice of time period for measurement and the calculation methodology are critical to achieving practical results.**

   Appropriate risk-adjustment of each security's contribution to the portfolio reduces unintended market exposures and improves the quality of attribution results, which in turn improves our ability to analyze potential strengths and weaknesses of the portfolio.

Correlation of Beta Contribution to Selection Effect by Beta Calculation Method
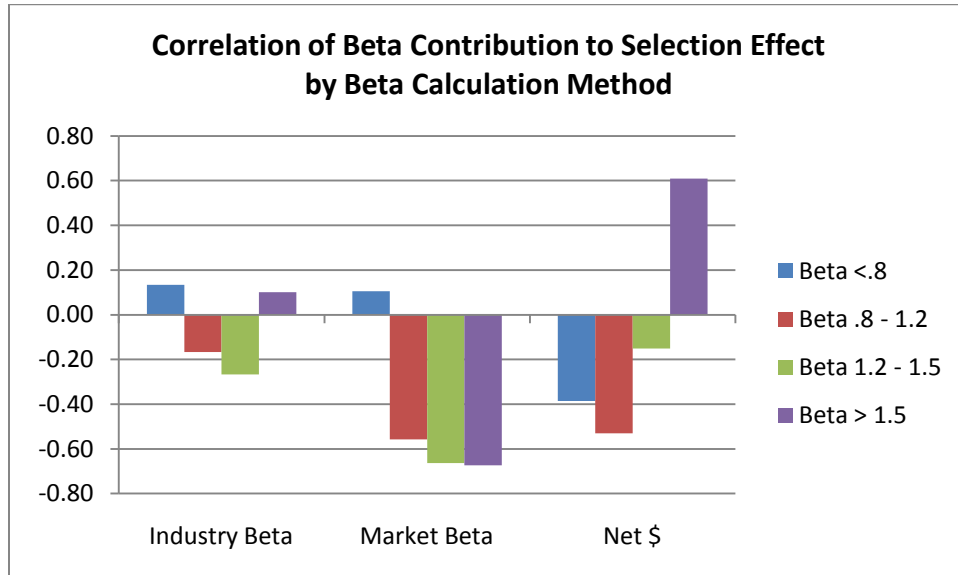
   Significant positive or negative correlation of attribution effects indicates the choice of risk measure is either overstating or understating the degree of market-related risk. Measuring each security's beta relative to its industry sub-group is more effective than using market beta or simple $ exposure.

   The portfolio's Net $ exposure or Net Beta exposure is often a poor predictor of the market's influence on portfolio results. The source of net beta is critical to understanding how market subtleties are affecting performance. There are numerous examples in the analysis of this portfolio where the total portfolio had a negative beta contribution despite the total net beta being favored by market direction. One example of this is having net positive industry beta in an underperforming industry, while having net negative industry beta in an industry that outperformed.

2. **High beta stocks have contributed significantly to negative total returns, due to both a net long bias and to poor stock selection. The total portfolio ex high beta stocks has shown positive stock selection.**

Returns by Beta Bucket

Beta Contribution to Returns - by Beta Bucket

Selection Effect by Beta Bucket
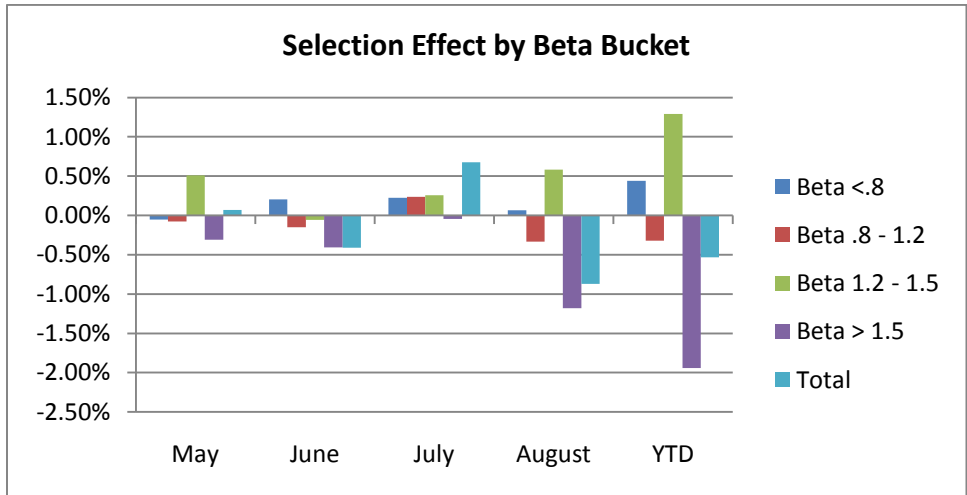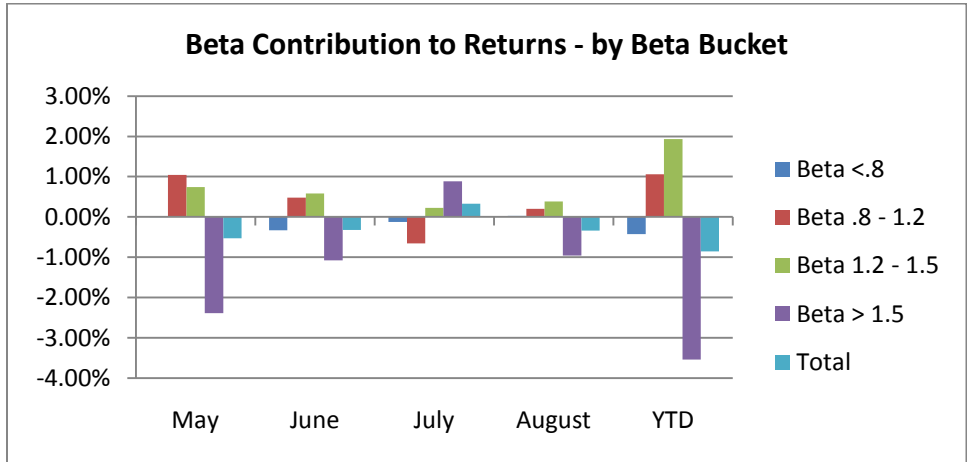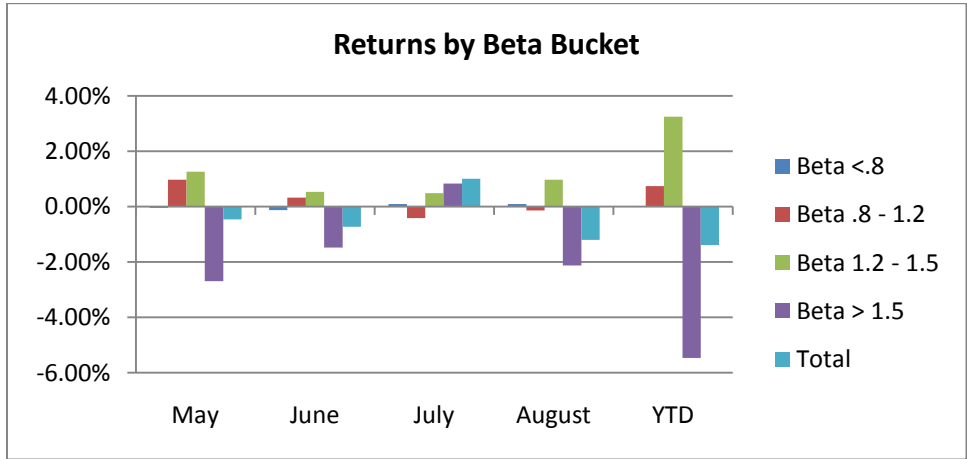
Industry Beta-Adjusted Security Selection by Beta Bucket

	Beta <.8	Beta .8 - 1.2	Beta 1.2 - 1.5	Beta > 1.5	Total	X Beta>1.5
May	-0.05%	-0.08%	0.51%	-0.31%	0.07%	0.38%
June	0.20%	-0.15%	-0.06%	-0.41%	-0.41%	0.00%
July	0.22%	0.24%	0.26%	-0.04%	0.68%	0.72%
August	0.06%	-0.33%	0.58%	-1.18%	-0.87%	0.32%
Total	0.44%	-0.32%	1.29%	-1.94%	-0.53%	1.41%

3. **The high beta portion of the portfolio tends to be 1)small capitalization, 2) low yield, 3)"value" style and 4) exhibits unpredictable behavior that is a challenge to both portfolio construction and stock selection.**

A randomly selected portfolio (May 17) indicates the high beta portion of the portfolio contributes significant net beta and smaller capitalization value tilts to the total portfolio.

Characteristics – May 17 High Beta Portfolio

	Long	Short
Portfolio Leverage	0.31	-0.04
Beta	0.48	-0.06
Wtd. Average Mkt Cap ($B)	4.29	-5.20
Dividend Yield	1.88	1.85
Std Dev of Error Term	11.54	-1.24

Style Exposure – May 17 High Beta Portfolio

	Growth	Core	Value	Total
Large	0.04	0.02	0.02	0.07
Mid	0.00	0.00	0.17	0.17
Small	0.00	0.08	0.09	0.17
Total	0.04	0.10	0.27	0.42

Characteristics – May 17 Total Portfolio

	Long	Short
Portfolio Leverage	1.14	-1.14
Beta	1.35	-1.23
Wtd. Average Mkt Cap ($B)	7.14	-8.19
Dividend Yield	3.53	3.04
Std Dev of Error Term	7.66	-5.75

Style Exposure – May 17 Total Portfolio

	Growth	Core	Value	Total
Large	-0.06	-0.09	0.02	-0.13
Mid	-0.13	0.04	0.19	0.11
Small	0.00	0.03	0.11	0.14
Total	-0.19	-0.02	0.32	0.12

4. **Negative stock selection from high beta stocks does not appear to have an industry bias.**

High Beta Stock Selection

	Retail REITs	Specialized REITs	Life & Health Insurance	Multi-line Insurance	Banks	Cons Svcs
May	0.25%	-0.10%	-0.06%	0.09%	0.09%	-0.53%
June	0.05%	0.12%	0.00%	-0.22%	-0.03%	-0.26%
July	-0.13%	0.05%	-0.29%	0.11%	0.34%	0.00%
August	-0.84%	-0.18%	-0.33%	0.04%	-0.08%	-0.01%
YTD	-0.67%	-0.10%	-0.67%	0.02%	0.33%	-0.80%

With the exception of Banks, each industry group with significant results from high beta stocks had flat to negative results from stock selection.

5. **A tendency to offset $ Net exposure in REIT industry sub-groups is reasonably effective as these groups have high cross-correlation.**

REIT Sub-Group Index Correlations

	Residential REITs	Diversified REITs	Industrial REITs	Office REITs	Retail REITs	Specialized REITs	Beta to S&P 500
Residential REITs	1.00						1.46
Diversified REITs	0.96	1.00					1.46
Industrial REITs	0.93	0.94	1.00				1.76
Office REITs	0.96	0.98	0.95	1.00			1.48
Retail REITs	0.96	0.98	0.93	0.98	1.00		1.40
Specialized REITs	0.95	0.97	0.93	0.97	0.97	1.00	1.33

Care should be taken with Industrial REITs as they have the lowest correlation to other REIT sub-groups and a significantly higher beta to the S&P 500. While the correlations may only seem marginally lower, relatively speaking, a correlation in the low 90s does not signify a tight fit. For example, Specialized REITs have a correlation to the S&P 500 of .91, thus the beta-adjusted broad market would hedge Specialized REITs almost as well as Residential REITs would hedge Industrial REITs.

6. **A tendency to offset $ Net exposure between Banks and Capital Markets has not been effective as these groups have lower cross correlation and dissimilar volatility.**

Bank and Capital Markets Sub-Group Index Correlations

	Banks	Capital Markets	Beta to S&P 500
Banks	1.00		1.45
Capital Markets	0.87	1.00	1.17

Both sub-groups enjoyed strong stock selection for the 4 month period, but banks were negative on a total return basis due to negative contribution from net beta.

Attribution Results for Capital Markets and Banks

	Capital Markets	Banks	Total
Return	1.18%	-0.17%	1.01%
Beta Contribution	0.41%	-0.76%	-0.35%
Selection	0.77%	0.58%	1.35%

7. **The Insurance sub-groups are particularly differentiated in terms of both correlation and market risk. This high dispersion suggests these groups should be constructed separately.**

Insurance Sub-Group Index Correlations

	Life & Health	Multi-Line	Property & Casualty	Reinsurance	Insurance Brokers	Beta to S&P 500
Life & Health	1.00					2.24
Multi-Line	0.88	1.00				1.77
Property & Casualty	0.85	0.83	1.00			1.08
Reinsurance	0.75	0.72	0.83	1.00		0.91
Insurance Brokers	0.70	0.68	0.73	0.66	1.00	0.77

The beta contribution to returns for the Insurance sub-groups has been a source of monthly volatility, but has not yet caused a significant cumulative effect.

Beta Contribution to Returns – Insurance Sub-Groups

	Life & Health	Multi-line	Property & Casualty	Reinsurance	Insurance Brokers	Total Insurance
May	0.19%	0.11%	-0.30%	0.11%	0.00%	0.11%
June	0.09%	-0.33%	-0.53%	0.51%	0.00%	-0.26%
July	0.01%	0.37%	-0.03%	-0.19%	0.00%	0.16%
August	0.11%	-0.33%	0.03%	0.00%	0.00%	-0.19%
Total	0.40%	-0.18%	-0.83%	0.44%	0.00%	-0.17%